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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/829,714
Filing Date: April 10, 2001
Appellant(s): DENTON ET AL.

Cynthia S. Murphy
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 06/07/2007 appealing from the Office action mailed 07/11/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

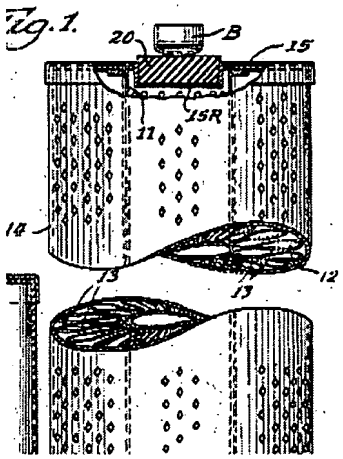
3,516,549	MACDONNELL	06-1970
3,506,475	MACDONNELL	04-1970
6,165,572	KAHLBAUGH ET AL.	12-2000

5,552,048	MILLER ET AL.	09-1996
6,331,223	WYLIE ET AL.	12-2001

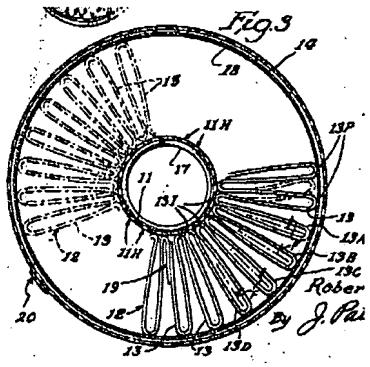
(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

- Claims 66-75, 77, 79-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonnell (U.S. 3,516,549) in view of MacDonnell (U.S. 3,506,475) and Kahlbaugh et al. (U.S. 6,165,572) and Miller et al. (U.S. 5,552,048). MacDonnell '549 discloses a filter element including pleated filter media 13 and an exoskeleton support screen 14 having a



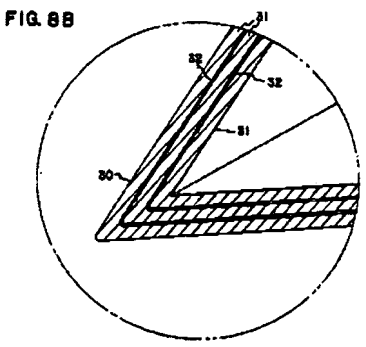
width approx. equal to the axial dimension of the filter media. The element is characterized by the absence of support structure surrounding the support screen [as in claim 66]. MacDonnell '549 doesn't teach the screen being thermally-bonded to the radially-outer peaks of the filter media, providing an at least 50% open flow area, and providing a tight array of attachment points supporting the pleats in an appropriately spaced and non-collapsed condition, but such is taught by MacDonnell '475. MacDonnell '475 teaches a fuel filter for removing



particulates as small as 5 microns or smaller (col. 1, lines 45-46; col. 2, lines 37-38) [as in claim 77]. The filter is cylindrical (figure 1) and includes longitudinally-extending pleats without an endoskeleton for support. An exoskeleton 18 in the form of a netting is attached to each of the outer pleats by an thermo-

setting adhesive and a heating plate (col. 5, lines 26-40) [as in claim 66]. The filter includes about 9.2 pleats per diameter inch (60 pleats/6.5 diameter inches, see col. 9, lines 26-27) [as in claim 67]. As indicated in col. 9, lines 1-4, the netting 18 is for mechanically-ganging the pleats together and has a large-sized mesh to insure *full flow* action through the filter (it is obvious that such would require at least 50% open flow area to allow for the desired full flow through the filter; the exact flow area percentage is a matter of optimization for the desired filter operating characteristics) [as in claim 66]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the bonded exoskeleton support screen of MacDonnell '475 for the exoskeleton of MacDonnell '549 (or to have the support of MacDonnell '549 to be bonded to the pleats as in MacDonnell '475), since '475 teaches the benefit of ganging the pleats to cause a flexing action to prevent a permanent pleat collapse. MacDonnell '475 teaches a pleated formed of fibrous sheet material that can be any one of or a combination of materials, including cotton, wood or *synthetic* (cellulose-free) fibers; but he does not teach a fiberglass (or polymer) filtration layer sandwiched between inner and outer layers of non-woven polymer.

The modified MacDonnell doesn't teach filter *layers* of only cellulose-fiber-free and woven-mesh-free layers that consist of essentially inner, outer, and filter layers but such is taught by



Kahlbaugh. Kahlbaugh teaches a multi-layer fibrous pleated media for filtering gases or liquid *including fuel* (col. 4, lines 48-52; col. 29, lines 25-56), wherein any of the inner layers are sandwiched between adjacent layers and wherein the layers are

made of nonwoven polymer fibers (e.g. polypropylene or polyamide) or fibers of glass (col. 16, lines 61-63) [as in claims 66-69 and 71]. Kahlbaugh also teaches fibers with the "Reemay" trademark, as in the applicant's specification; preferred arrangements having a pleat density of 1-15 pleats/per diameter inch (col. 25, lines 10-16); and an example filter construction consisting of a 3-layer pleated media of micro-glass fibers that demonstrates the superiority over a cellulose-type media (see Experiment 4, col. 36). It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the pleated multi-layer media of Kahlbaugh as the media of the modified MacDonnell, since Kahlbaugh teaches the benefit of a filter media that can be specifically configured and constructed to provide relatively long life in relatively efficient systems (col. 7, lines 9-13), e.g. the filter can have an efficiency of 99% in fuel filtering systems (col. 29, lines 40-45).

Kahlbaugh also teaches that each coarse layer sandwiching a fine fiber layer is no greater than 0.030 inches (col. 15, lines 30-35) and preferably .001-.010 (col. 3, lines 55-57)[as in claims 70-71].

As for claim 79, it is contended that the invention of MacDonnell as modified above to have the claimed filter media would have the ability to perform as a coalescer element.

Though the modified MacDonnell doesn't teach the support 18 to include a seam allowance, he teaches outerwrap 14 to include a seam allowance 20 (figure 3) such that would skilled in the art would know to include a seam allowance when manufacturing the element when the support 18

is initially in sheet form. MacDonnell doesn't teach the support to be thermally-bonded to the pleats. However, such is known in the art of Miller. As shown in figure 9 and explained in col. 11, line 59 to col. 12, line 6, Miller teaches his exoskeleton to be made of a polymeric mesh (thermally-bondable) that is heat-bonded to his filter pleats. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the exoskeleton of MacDonnell '475, as modified by MacDonnell '549 and Kahlbaugh to be made of the material as in Miller, since Miller teaches the advantage of not requiring adhesive, which would save material costs and simplify manufacture. Miller also teaches the concept of overlapping (figure 6) and extending the support the full axial length [as in claims 73-74]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to having the support of MacDonnell to have overlapping (a seam allowance) as in Miller in order to have the benefit of provide adequate support for the filter element during operation. Upon modification, the lateral seam of support 18 would extend parallel to the longitudinal axis of the filter media and would itself be heat-fused [as in claim 75]. As for claim 72, the relative spacing between e.g. the longitudinal screen cords of support 18 and the pleat spaces thereof is considered to be within ordinary skill in view of Millers teaching that gird size is chosen depending upon "the properties of the fluid to be filtered, the flow rate, and other factors" as taught by Miller in col. 11, lines 63-65.

As for claims 80-87, the modified MacDonnell (U.S. 3,516,549) teaches all the limitations thereof including the additional limitations of bounded end caps. MacDonnell '549 teaches a bonded end cap but doesn't specify an embodiment wherein both end caps are bonded to the

ends of the element. However, such is taught by Miller (col. 4, lines 2-10). It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have both end caps of MacDonnell to be bounded to the ends of the filter element, since such would provide additional support for the element to resist e.g. skewing forces applied thereto. MacDonnell teaches a core 11 circumscribed by the element [as in claim 84]. As for the use of "consisting essentially of" for the transitional word of the claim, applicant is reminded that "it is proper for the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, 'consisting essentially of' will be construed as equivalent to 'comprising'." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355. In this case, on page 9, lines 1-4, Applicant has NOT defined the scope of the phrase "consisting essentially of" for purposes of its patent and has NOT made clear in its specification what he regards as constituting a material change in the basic and novel characteristics of the invention. Therefore, this phrase does NOT preclude an outer wrap layer from claims 80 and 84.

- Claim 76 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonnell, as modified above, and in further view of Wylie et al. (U.S. 6,331,223). Wylie teaches a screen material that is made of PVC coated fiberglass (col. 1, line 66 to col. 2, line 6. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the modified screen of MacDonnell to be made of the material of Wylie, since Wylie teaches the benefit of a screen material that is heat-fused and that is most popular (which would have the benefit of likely availability).

(10) Response to Argument

Applicant's arguments have been fully considered but they are not persuasive.

- Concerning claim 80 (Applicant's broadest claim) and claim 84, Applicant argues that use of the term "consisting essentially of" in the claims precludes an outer wrap around the support screen. This is not found to be convincing since, as explained in section 9 above, Applicant has NOT defined the scope of the phrase "consisting essentially of" for purposes of its patent and has NOT made clear in its specification what he regards as constituting a material change in the basic and novel characteristics of the invention. Therefore, this phrase does NOT preclude an additional outer wrap layer from claims 80 and 84.
- Applicant argues that the netting 18 of MacDonnell '475 would not be able to operate as the exoskeleton wrap 14 of MacDonnell '549 because the netting 18 would not be able to provide support in a high pressure environment of MacDonnell '549. However, it is pointed out that MacDonnell '549 is for general application to filters (col. 1, lines 28-29) and doesn't specify only for use in a high pressure environment requiring significant support for the pleats. Also, (1) in the case wherein the wrap 14 of the primary reference is replaced by the netting 14: it is stated that (i) upon modification, the netting 18 would extend the full axial length of the filter (as the wrap 14 it was intended to replace) and would provide additional support, and (ii) that upon modification of the filter media to include the additional layers of Kahlbaugh, the media would be more rigid requiring less support from the netting. (2) In the case wherein the wrap 14 of the primary reference is modified to be thermally-bonded to the pleats, as in the netting 18 of MacDonnell '475, the support provided by the wrap 14 would be enhanced.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

TKC

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PRIMARY EXAMINER

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